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## RADIOCHEMICAL DIAGNOSTICS FOR NATIONAL IGNITION FACILITY IGNITION CAPSULES

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In 2010 (or shortly thereafter), the National Ignition Facility (NIF) is scheduled to achieve ignition. We propose radiochemistry of the burn products as an attractive way to measure the amount of DT fuel that is mixed in with the surrounding ablator material. In addition, radiochemistry offers the possibility to measure the temperature history of the DT fuel burn, the  $\langle \rho r \rangle$ , and the neutron fluence of reaction-in-flight, 14 MeV, and low energy neutrons. We can use prompt  $\beta$  spectroscopy from the debris products and collection of the debris (for mass spectroscopy) to make the radiochemical measurements. Radiochemistry thus offers the opportunity to make unique measurements as well as provide cross checks with results from other diagnostics for NIF ignition capsules. We will mostly discuss reactions involving 0.9 atom % copper doped beryllium ablator capsules, but we will also look at Ge-doped plastic ablators and different hohlraum materials.

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